

Honors Chemistry Quiz: Chapter 3

Name: _____ Period: _____ Date: _____

This quiz is worth 48 points, each correct response to a multiple choice question is worth 2 points. Only those quizzes completed in black ink will be graded. Good luck!

1) Which of the following contains BOTH ionic and covalent bonds?

A) CaI_2

B) COS

C) CaSO_4

D) SF_6

E) None of the above contain both ionic and covalent bonds.

2) Give a possible molecular formula for $\text{C}_3\text{H}_5\text{ClO}$

A) $\text{C}_6\text{H}_{10}\text{ClO}_2$

B) $\text{C}_5\text{H}_{10}\text{Cl}_2\text{O}_2$

C) $\text{C}_6\text{H}_{10}\text{Cl}_2\text{O}_2$

D) $\text{C}_6\text{H}_{10}\text{O}_2$

E) $\text{C}_6\text{H}_{12}\text{Cl}_2\text{O}_2$

3) Which of the following exists as a polyatomic molecule?

A) N

B) C

C) P

D) Na

E) Ne

4) Determine the name for TiCO_3 . Remember that titanium forms several ions.

A) titanium (II) carbonate

B) titanium carbide

A C) titanium carbonite

D) titanium (II) carbonite

E) titanium (I) carbonate

5) Write the formula for copper (II) sulfate pentahydrate.

A) $\text{Cu}_2\text{SO}_3 \cdot \text{H}_5$

B) $\text{Cu}_2\text{S} \cdot \text{H}_2\text{O}$

E C) $\text{CuS} \cdot 5\text{H}_2\text{O}$

D) $(\text{CuSO}_4)_5$

E) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

6) Calculate the molar mass of H_2CO_3 .

- A) 62.03 g/mol
B) 69.02 g/mol
A C) 61.02 g/mol
D) 60.01 g/mol
E) 74.04 g/mol

7) How many C_2H_4 molecules are contained in 45.8 g of C_2H_4 ? The molar mass of C_2H_4 is 28.05 g/mol.

- A) 9.83×10^{20} C_2H_4 molecules
B) 7.74×10^{26} C_2H_4 molecules
E C) 2.71×10^{20} C_2H_4 molecules
D) 3.69×10^{23} C_2H_4 molecules
E) 9.83×10^{23} C_2H_4 molecules

8) Calculate the mass percent composition of oxygen in Li_3PO_4 .

- A) 26.75 %
B) 17.98 %
D C) 30.72 %
D) 55.27 %
E) 20.82 %

9) How many moles of PCl_3 contain 3.68×10^{25} chlorine atoms?

- A) 61.1 moles PCl_3
B) 20.4 moles PCl_3
B C) 16.4 moles PCl_3
D) 54.5 moles PCl_3
E) 49.1 moles PCl_3

10) How many atoms of carbon are contained in 47.6 g of $\text{Al}_2(\text{CO}_3)_3$? The molar mass of $\text{Al}_2(\text{CO}_3)_3$ is 233.99 g/mol.

- A) 1.23×10^{23} C atoms
B) 2.96×10^{24} C atoms
E C) 2.87×10^{25} C atoms
D) 1.10×10^{24} C atoms
E) 3.68×10^{23} C atoms

11) How many molecules of butane are contained in 25.0 mL of butane? The density of butane is 0.6011 g/mL and the molar mass is 58.12 g/mol.

- D
- A) 2.59×10^{23} molecules butane
 - B) 1.46×10^{27} molecules butane
 - C) 6.87×10^{23} molecules butane
 - D) 1.56×10^{23} molecules butane
 - E) 7.14×10^{25} molecules butane

12) Determine the molecular formula of a compound that has a molar mass of 183.2 g/mol and an empirical formula of $C_2H_5O_2$.

- B
- A) $C_2H_5O_2$
 - B) $C_6H_{15}O_6$
 - C) $C_3H_7O_3$
 - D) $C_4H_{10}O_4$
 - E) $C_8H_{20}O_8$

13) Determine the molecular formula for a compound that is 70.79% carbon, 8.91% hydrogen, 4.59% nitrogen, and 15.72% oxygen.

- A
- A) $C_{18}H_{27}NO_3$
 - B) $C_{18}H_{27}NO_2$
 - C) $C_{17}H_{27}NO_3$
 - D) $C_{17}H_{26}NO_3$
 - E) None of the above.

14) Determine the molecular formula of a compound that is 49.48% carbon, 5.19% hydrogen, 28.85% nitrogen, and 16.48% oxygen. The molecular weight is 194.19 g/mol.

- C
- A) $C_8H_{12}N_4O_2$
 - B) $C_4H_5N_2O$
 - C) $C_8H_{10}N_4O_2$
 - D) $C_8H_{10}N_2O$
 - E) None of the above.

15) Combustion analysis of 63.8 mg of a C, H and O containing compound produced 145.0 mg of CO_2 and 59.38 mg of H_2O . What is the empirical formula for the compound?

- C
- A) C_5H_2O
 - B) CHO
 - C) C_3H_6O
 - D) C_3H_7O
 - E) C_6HO_3

16) Identify a hydrocarbon.

A) $\text{CH}_3\text{CH}_2\text{OCH}_2\text{CH}_3$

B) $\text{CH}_3\text{CH}_2\text{OH}$

D

C) $\text{CH}_3\text{CH}_2\text{NH}_2$

D) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$

E) CH_3COOH

17) In which set do all elements tend to form anions in binary ionic compounds?

A) C, S, Pb

B) K, Fe, Br

D

C) Li, Na, K

D) N, O, I

E) None of the above.

18) Which of the compounds C_4H_{10} , BaCl_2 , $\text{Ni}(\text{NO}_3)_2$, SF_6 are expected to exist as molecules?

A) only C_4H_{10}

B

B) C_4H_{10} and SF_6

C) C_4H_{10} , $\text{Ni}(\text{NO}_3)_2$, and SF_6

D) BaCl_2 and $\text{Ni}(\text{NO}_3)_2$

E) All exist as molecules.

19) How many SO_3 ions are contained in 99.6 mg of Na_2SO_3 ? The molar mass of Na_2SO_3 is 126.05 g/mol.

A) 1.52×10^{27} SO_3 ions

B) 4.76×10^{20} SO_3 ions

B

C) 2.10×10^{21} SO_3 ions

D) 1.05×10^{21} SO_3 ions

E) 9.52×10^{20} SO_3 ions

20) Which of the compounds, Li_3N , NH_3 , C_3H_8 , IF_3 are ionic compounds?

A) only C_3H_8

B) only Li_3N

B

C) Li_3N and NH_3

D) NH_3 , C_3H_8 , and IF_3

E) None are ionic compounds.

21) Which of the following elements has the **least** tendency to form an ion?

- A) Ca
- B) K
- C) Kr
- D) Se
- E) Al

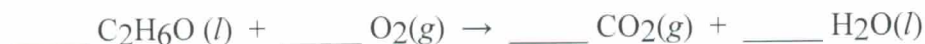
C

22) What is the molar mass of nitrogen gas?

- A) 14.0 g/mol
- B) 28.0 g/mol
- C) 6.02×10^{23} g/mol
- D) 1.20×10^{23} g/mol
- E) 32.00 g/mol

B

23) What is the stoichiometric coefficient for oxygen when the following equation is balanced using the lowest, whole-number coefficients?



- A) 9
- B) 7
- C) 5
- D) 3
- E) 2

D

24) Calcium phosphate reacts with sulfuric acid to form calcium sulfate and phosphoric acid. What is the coefficient for sulfuric acid when the equation is balanced using the lowest, whole-numbered coefficients?

- A) 1
- B) 2
- C) 3
- D) 4
- E) none of these

C